

## The Implication of Attitude Towards Educational Support System (ESS) Use in Education

Intan Emilya Suka<sup>1</sup> & Norhadilah Abdul Hamid<sup>1,\*</sup>

<sup>1</sup>Department of Production and Operations Management, Faculty of Technology Management and Business, Universiti Tun Hussein Onn, Malaysia, Parit Raja, Batu Pahat, Johor, 86400 MALAYSIA

\*Corresponding Author

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**Abstract:** The information transmission through advancement of personal computer and its application should be possible higher, quicker, and friendlier. There are expanding in number of new advances and programming that can be utilized for instructive reason. Through Educational Support System (ESS), exercises, for example, procuring, arranging, conveying, delivering, advancing, displaying should be possible as it give a variety of apparatuses and assets. ESS can be expected as help to college and instructors as it likewise helps in achieve the destinations of educating. Furthermore, ESS can make learning procedure and research increasingly powerful by preparing data materials required for address planning and explore and give innovations expected to the creation, duplication, refreshing and conveyance of address easily. While, the current literature focuses on the users' continuance satisfaction, perception towards technology, intention to utilize ESS and the effectiveness of ESS, there is comparative lack of research on the impact of attitude towards ESS use in education. Hence, the current study adopted Technology Adoption Model to investigate the attitude among Universiti Tun Hussein Onn Malaysia (UTHM) lecturers. This paper aim to identify the relationship between attitudes towards ESS use in education. The study employed random sampling method and quantitative research design. For quantitative analysis, data collected through online survey questionnaire and the questionnaire is adopted from previous study. The expected outcome of the research is there is positive relationship between attitudes towards ESS use in education.

**Keywords:** Attitude, Educational Support System (ESS)

## 1. Introduction

Educational Support Systems (ESS) can be define as instructional preparation and delivery to whether a real life classroom or virtual classroom by using information, communication and telecommunication technologies (Adetoun, 2017). The technique in which information resources are formed, managed and used are the effect from the interaction of computing and communication technologies significantly (Akinde, 2017). The planning and implementation of ESS is advised to institutions which will take advantage of these developments (Imtiaz & Maarop, 2014). It is important as ESS has changes how educators can retrieve, collect, analyze, demonstrate and transfer information to their students and peers by given educators more power in the classroom (Langkos, 2019). The ESS also has provided educators with a huge amount of software, websites and resources that can be utilized for instructional purposes (Yulisman, 2017).

### 1.1 Research Background

Educational Support System (ESS) can be classified into two classes which are the technologies used for lecture preparation and technologies used for lecture delivery. However, there are technologies that can be used for both purposes (Adetoun, 2017). Meanwhile, in UTHM there is a center for global online learning which play the role for planning, to match and monitor the development of e-learning and the execution of initiative that being executed by each faculty in UTHM. The common ESS used in UTHM are Kahoot, Edmodo, Openlearning, Google application, Blendspace, Massive Open Online Courses (MOOCs), Turnitin, Youtube and Padlet.

Attitudes can be defined as react towards a certain concept, object, individual or state positively or negatively as a predisposition or a tendency (Ganiyu, R. S., Olasedidun, O. K. & Badmus, 2014). Educators' acceptance and readiness to use technology is the main reason for the effectiveness of educational technology and not by its mere presence in the classroom (Imtiaz & Maarop, 2014). Hence, this study examines the UTHM lecturers' attitude towards the use of ESS in education.

### 1.2 Problem Statements

Educational Support System (ESS) is regard as one of the key tools for delivering information at the university (Pettersson, 2017). The development and application of e-learning which is one of the Educational Support System (ESS) also have become a requirement for Malaysian higher education institution (Islam *et al.*, 2019). That is because of the advantages it brings to the institution. There are few of articles debating on the use of e-learning in Malaysian higher education institution. This shows that there is a need to identify factors that affected the use of ESS on Malaysia education including UTHM as one of the Malaysian higher education institution. Previously, it has been identified a few number of factors that effects the use of ESS. However, there are few studies looking at the impact of attitude towards ESS use in education and far between (Wang, 2017). In addition, according to (Al-emran, Elsherif, & Shaalan, 2016) attitudes is an important factor that helps to identify strengths and weakness and facilitate the development of the technology infrastructure.

### 1.3 Research Questions

From the discussion above, the main research questions here, is there any relationship between attitude and Educational Support System (ESS) in Universiti Tun Hussein Onn Malaysia (UTHM)?

### 1.4 Research Objectives

Therefore, this study is attempt to determine the relationship between attitude and Educational Support System (ESS) in UTHM.

### 1.5 Significance of the Study.

- (i) This study aims to provide a better insight to university authorities in providing better ESS facilities.
- (ii) An exploration of lecturers' attitude on their use of ESS may contribute to decisions about future developmental needs.

### 1.6 Scope of the Study

The research is a study of the UTHM lecturers' attitudes towards ESS use in education. This research will be conducted in UTHM or also is known as Tun Hussein Onn University of Malaysia, it is a public university located in Batu Pahat, Johor, Malaysia and the research focused amongst the UTHM lecturers'.

## 2. Literature Review

In this section, the term being used in this research will be discussed and the summarization of articles review from previous research has been conducted. It consists of variables from the independent variable and dependent variable. The independent variable in this study is attitudes and dependent variable is Educational Support System (ESS).

### 2.1 Educational Support System (ESS)

There are increasing in amount of new technologies and software that can be used for educational purpose (Adetoun, 2017). This increment of technological development had given a lot of new opportunities to the educators to investigate several educational software packages and websites in their educations (Nikou & Economides, 2017). Through ESS, activities such as acquiring, organizing, communicating, producing, promoting, presenting could be done as it provides an array of tools and resources (Akinde, 2017). ESS can be assumed as aid to university and educators as it also helps in reach the objectives of teaching (Langkos, 2019). In addition, ESS can make learning process and research more effective by equipping information materials needed for lecture preparation and research and provide technologies needed for the production, duplication, updating and delivery of lecture with ease (Wang, 2017).

#### *(a) Educational Support System Use in Education*

There numerous kinds of instructional technologies that can be applied to help and increase the learning method whether in the actual or virtual classroom (Chouit, 2017). It has been identified that different content and purposes in classroom needs different type of technologies (Ghavifekr, Athirah, Rosdy, & Teaching, 2015). That is why various type of technologies are very important. Two types of ESS that famous amongst educators which are, firstly specifically for lecture preparation and secondly for delivery. However, there certain technologies could be useful for both purposes (Nikou & Economides, 2017).

### 2.2 Review of Previous Study on Educational Support System (ESS)

There are several studies which have been conducted by other researcher towards the factors that effects the use of ESS, whereby these factors have significant impact towards the use of Educational Support System (ESS).

#### *(a) Users' Continuance Satisfaction*

The first factor identified is user's continuance satisfaction. A study by Al-samarraie, Teng, & Alzahrani, (2017) user's continuance satisfaction plays significant role in effecting the use of ESS.

These authors then proposed that users, both students and educators will continue using it if the system could continuously give high satisfaction to them. The study examines users' continuance satisfaction with regard to ESS, because as explained by (Yu, Chang, & Chen, 2018) continued technology use is a temporal phenomenon, and can only be measured using the initial set of perceptions intentions related to technology continuance. The users' continuance intentions have been examined and it is found that it significantly reliant on the satisfaction users experienced about the use of the ESS (Kasmin & Hii, 2017). An individual's post-consumption assessment of a particular transaction is being measured as for the satisfaction (Ng, 2018).

#### *(b) Perceptions Towards Technology*

The second factor identified is perceptions towards technology. A study by (Islam *et al.*, 2019) perceptions towards technology plays significant role in effecting the use of ESS. Educators are often hesitant to adopt technology in their classrooms and resists to make effective use of technology as their overall capability is low (Zogheib, Zogheib, & Elshaheli, 2015). There are many educators that show low use of an available technology and exhibit only moderate amounts of variance when using technology (Hamid, Waycott, Kurnia, & Chang, 2015). Even after a decade, the use of ESS was found to be underutilized by the educators (Al-said, 2015).

#### *(c) Intention to Utilize ESS*

The third factor identified is students' intention to utilize ESS. A study by (Al-rahmi *et al.*, 2018) students' intention to utilize ESS plays significant role in effecting the use of ESS. Factors that can influence behavioral intentions are perceived usefulness and ease of use (Teo & Zhou, 2014). The study conducted by (Alharbi & Drew, 2014) suggested that measured using perceived usefulness, users' continuance intention is extremely influenced by their satisfaction. There are some factors being selected, because it is essential to measure usefulness and satisfaction with respects to purpose to use the ESS (Brezavšček, 2017).

#### *(d) The effectiveness of ESS*

The last factor identified is the effectiveness of ESS as there is a lot of studies looking at the effectiveness of ESS. A study by (Noesgaard, Ørngreen, & Foundation, 2015) the effectiveness of ESS plays significant role in effecting the use of ESS. The study carried out by (Kintu, Zhu, & Kagambe, 2017) has found that self-efficacy, interface, community, usefulness, students' satisfaction and intention to use the ESS are the factors that's correlate with ESS effectiveness. The results from the study from Jahjough, (2014) show that ESS use positively and significantly related to students' satisfaction, usefulness that is impact intention to use in turn affect e-learning effectiveness. The study from (Salter, Karia, Pharm, Sanfilippo, & Clifford, 2014) also found that the effectiveness of the system is being expanded by the system quality. These are the factors that influence the effect of ESS use in education. However, for this research, it looked into the impact of attitudes towards ESS use in education.

### *2.3 Attitudes*

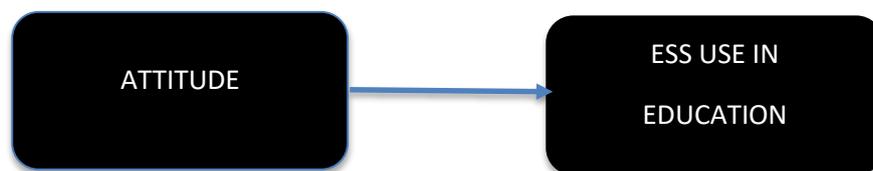
In term of psychology an attitude can be define as a psychological theory, it is a mental and emotional entity that inheres in, or characterizes a person (Wang, 2017). It is predisposed state of mind regarding a value of an individual's, and effects the person's believed and action as it is triggered through a responsive expression toward a individual, place, thing, or event. Attitude is typically assumed to guide or influence behaviour because it is viewed as a latent or underlying factor. In theory of attitudes, there is a close linkage between attitudes and behaviours within human action. Stated specifically, the intention to perform certain behaviour precedes the actual behaviour. Behavioural theories pointed out that it is the positive attitude of the individuals' leads to his behavioural actions (John, 2015).

**Table 1: Summary of article review**

<b>Factor</b>	<b>Author/Year</b>
Users' continuance satisfaction	(Yu <i>et al.</i> , 2018), (Horzum, 2015) (Pham, Limbu, Bui, Nguyen, & Pham, 2019), (Kasmin & Hii, 2017), (Anagnostopoulou & Koutsouba, 2015), (Ng, 2018), (Kauffman, 2015), (Al-samarraie <i>et al.</i> , 2017), (Topal, 2016), (Barbera & Linder-vanberschot, 2013)
Perception towards technology	(Islam <i>et al.</i> , 2019), (Emelyanova & Voronina, 2014), (Zogheib <i>et al.</i> , 2015), (Hill, Betts, Gardner, & Street, 2015), (Baki, 2018), (Ozdamli & Uzunboylu, 2015), (Hamid <i>et al.</i> , 2015), (Sivo, 2018), (Al-said, 2015)
Intention to utilize ESS	(Al-rahmi <i>et al.</i> , 2018), (Teo & Zhou, 2014), (Arpaci, 2016), (Technology, 2014), (Alharbi & Drew, 2014), (Brezavšček, 2017), (Rajesh & Dhuvandranah, 2018), (Huang, 2017), (Hess & Mcnab, 2014), (Mtebe, Raisamo, & Onlinecourses, 2014)
Effectiveness of ESS	(Al-rahmi, Othman, & Yusuf, 2015), (Xu, Huang, Wang, & Heales, 2014), (Kintu <i>et al.</i> , 2017), (Salter <i>et al.</i> , 2014), (Khasawneh <i>et al.</i> , 2016), (Jahjough, 2014), (Merchant, Goetz, Cifuentes, Keeney-kennicutt, & Davis, 2014), (Gündüz, 2016), (Noesgaard <i>et al.</i> , 2015), (Steenbergen-hu & Cooper, 2014)

(a) *The impact of attitudes towards ESS*

It is found that one of the key elements to the adoption towards technology is people's attitude (John, 2015). Attitude which influences the integration of the technology is a determinant factor (González, Ramírez, & Viadel, 2015). The educators, which have adopted a positive attitude toward the new technologies, recognize different software tools as a supplementary tool, which can make the learning, process easier (Papanastasiou & Aggeli, 2008). Educators' attitudes, is an indicator which can predict their willingness to use those ESS tools during in the classroom (Bakr, 2011). The integration of technology in classroom teaching will break down if educators' attitude towards technology is negative, or if educators refuse to use technology in the classroom for teaching process. Many studies have indicated that educators' attitude plays a significant role in the successful integration of technology into education.



**Figure 1: Conceptual framework adapt from Technology Acceptance Model from Davis 1989's (Fathema, Shannon, & Ross, 2015)**

## 2.4 Hypothesis Development

According to Arpaci (2016), behavior of individual to use a new system is defined as an individual's overall affective reaction to use the system. A study by Pettersson, (2017) found that the willingness to work colleagues and sharing material show a positive attitude towards the use digital material and educational software. There is a finding by (González *et al.*, 2015) which is promising attitudes toward computers correlate to computer use, frequency of Internet access, and self-confidence. There is also a

research by (John, 2015) found that people's attitude towards a technology is one of the key elements to its adoption. Therefore, the following hypothesis is formulated:

H1 : The attitude has significant relationship with ESS use in education.

### **3. Research Methodology**

#### **3.1 Research Process**

##### *(a)* Phase 1

The researcher makes certain that the subtitles in the research are easy to be understood. Next, problems were identified from reading the journals. Research objectives and others important element were also determined in this phase.

##### *(b)* Phase 2

Past studies were reviewed to give ideas that support the research objectives. Conceptual framework was formed based from the literature review of previous study. The information was gained through primary and secondary data. A pilot test will be carried out, the questionnaire will be distributed to the UTHM lecturers, descriptive and correlation analysis been carried out to answer the objectives stated.

##### *(c)* Phase 3

All the data was analyzed using Statistical Package for Social Science (SPSS). The last step is concluding a conclusion and recommendation for the research.

#### **3.2 Research design**

Quantitative research involved data collection and data analysis which is numerical. This research method focused on what could be measured and analyzed. In research context, population referred to the entire group of things or event, or people that the researcher wished to investigate. In this research, the population is the UTHM lecturers who had intended to use ESS for their teaching session whether in real classroom or virtual classroom. For this research, the sampling frame will be UTHM lecturers from all faculties. The questionnaire will be distributed among the all UTHM lecturers from all faculties. Random sampling technique will be used as the population is sampled randomly. For this research, the method that been used is distribution of questionnaire through online. The questionnaire used was adopted from previous study by Islam *et al.* (2019) and Akinde (2017). The research sample size was 285 respondents among 1,095 respondents in category of lecturers at Universiti Tun Hussein Onn Malaysia. Out of 285 questionnaires distributed through Google form and email, 123 valid questionnaires were answered by respondents. Therefore, the response rate was at 43.16%. Two analyses have been conducted which were descriptive analyses and correlation analyses.

### **4. Data Analysis and Results**

A reliability test was done to make sure the reliability of this research. The results show that all the variables are excellent reliability since the Cronbach's alpha value is in between 0.948 to 0.968. Therefore, there is no item need to be deleted in the questionnaire. Kolmogorov-Smirnov analysis was conducted and the significant value of the Kolmogorov-Smirnov for attitude of lecturers towards the use of ESS is 0.000 meanwhile the significant value for actual use of ESS by the lecturers is 0.009. This shows that the data gathered is not normally distributed because the significant value is less than 0.05.

#### 4.1 Descriptive analysis

The status shows that eight (6.5%) respondents with professor status, 17 (13.8%) with associate professor status, 32 (26.0%) with senior lecturer status, 59 (48.0%) with lecturer status, two (1.6%) with assistant lecturer status and five (4.1%) with graduate assistant status. Besides, the gender shows that male is the dominant of respondent with 52.8% meanwhile female respondent with 47.2%. The age group shows respondent with age range of 30-39 years old had the highest respondents for this research with 41.5% however age range of 20-29 years old had the lowest respondent with 8.1% meanwhile age range for 60 years old and above did not have any response. The highest qualification shows there are three (2.4%) respondents that had bachelor degree as their highest educational qualification, there 39 (31.7%) respondents had master degree as their highest educational qualification and there were 81 (65.9%) respondents had PhD as their highest educational qualification. The teaching experience shows 21 (17.1%) respondents that had 0-3 years of teaching experience, 17 (13.8%) respondents had 4-7 years of teaching experience, 27 (22.0%) respondents had 8-11 years teaching experience, 32 (26.0%) respondents had 12-15 years of teaching experience, 18 (14.6%) respondents had 16-19 years of teaching experience and there are 8 (6.5%) respondents had 20 years and above of teaching experience. The level of students taught shows there are 14 (11.4%) respondents that teaches only diploma students, 15 (12.2%) respondents teaches diploma and undergraduate students, 15 (12.2%) respondents that teaches diploma, undergraduate and postgraduate students. Only one (0.8%) respondents that teaches diploma and postgraduate students, 25 (20.3%) respondents that teaches only undergraduate students, 49 (39.8%) respondents that teaches undergraduate and postgraduate students and there are 4 (3.3%) respondents that only teaches postgraduate students.

The respondents that had personal computer (laptop/desktop), personal email box/address, social networking media account, handheld/mobile technologies and smartphones has the highest response which is 40 (32.5%) response meanwhile, the respondents that had all personal ownership of ESS tools has second highest response which is 16 (13.0%) response. However, third highest response are the respondents that had personal computer (laptop/desktop), personal blog/website, personal email box/address, social networking media account, handheld/mobile technologies and smartphones that has 11 (8.9%) response same as with respondents that had personal computer (laptop/desktop), personal email box/address, social networking media account, handheld/mobile technologies and smartphones. The percentage shows most of the respondents need instructional use of their personal ESS tools with 88.6% response of "Yes" meanwhile another 11.4% response of "No".

Most of the items in attitude of lecturers towards the use of ESS for teaching section had average central of tendency and only one item has low central of tendency. The highest mean is 3.15, "In my own opinion, ESS makes courses more interesting" which has standard deviation 1.033. However, the lowest mean is 2.32, "I use ESS for teaching often because they make me less anxious" with standard deviation of 1.140.

All of the items in actual use of ESS by the lecturers for teaching section had average central of tendency. The highest mean is 3.15, "I use ESS to search for literature relevant to my teaching subject" and "I use ESS to develop lecture content" with standard deviation of 1.087 and 0.964. However, the lowest mean was 2.56, "I use ESS to charge/discharge library resources on loan to me" with standard deviation of 1.057. Table 4 to 15 shows the descriptive analyse which listed in the appendix.

#### 4.2 Correlation analysis

The correlation analysis is to describe the relationship between the independent variables and the dependent variable. Based on the test results normality, data were analysed by Spearman correlation. The data gathered for this study are not normally distributed that Spearman test is conducted. Next, the attitude of lecturers towards the use of ESS and the actual use of ESS by the lecturers will be analysed.

There is one hypothesis that has been tested to identify the relationship between the attitude of lecturers towards the use of ESS for teaching and the actual use of ESS by lecturers. Table 2 shows the result of correlation test for the attitude of lecturers towards the use of ESS for teaching and the actual use of ESS by lecturers. The correlation is significant two-tailed less than 0.01 shows that there is relationship between the variables. The attitude of lecturers towards the use of ESS for teaching has high positive correlation to the actual use of ESS by lecturers with value of 0.761. In conclusion, the hypothesis is accepted. This is because according to significant two-tailed, hypothesis that valued less than 0.01 significant is accepted.

**Table 2: Results of Spearman correlation test**

Variables	Attitude of lecturers towards the use of ESS for teaching
Actual use of ESS by lecturers	0.761**

## 5. Discussion and Conclusion

This research was conducted to identify the implication of attitude towards Educational Support System (ESS) use in education among the lecturers of Universiti Tun Hussein Onn Malaysia. There are several studies which have been conducted by other researcher towards the factors that effects the use of ESS, whereby these factors have significant impact towards the use of Educational Support System (ESS). For example, a study by (Al-samarraie *et al.*, 2017) user's continuance satisfaction plays significant role in effecting the use of ESS. This study then proposed that users, both students and educators will continue using it if both parties continually be satisfied with the systems offered. There are a lot of studies looking at the perceptions towards technology. A study by (Islam *et al.*, 2019) perceptions towards technology plays significant role in effecting the use of ESS. Educators are often hesitant to adopt technology in their classrooms and resists to make effective use of technology as their overall capability is low (Zogheib *et al.*, 2015). Besides, a study by (Al-rahmi *et al.*, 2018) students' intention to utilize ESS plays significant role in effecting the use of ESS. Factors that can influence behavioral intentions are perceived usefulness and ease of use (Teo & Zhou, 2014). Lastly, a study by (Noesgaard *et al.*, 2015) the effectiveness of ESS plays significant role in effecting the use of ESS. The study carried out by (Kintu *et al.*, 2017) has found that self-efficacy, interface, community, usefulness, students' satisfaction and intention to use the ESS are the factors that's correlate with ESS effectiveness.

Based on the previous chapter that shows data have been analysed and summarized the research objectives which is to determine the relationship between attitude and ESS use. Based on Table 4.13 the total mean is 2.80 that shows the attitude of lecturers towards the use of ESS for teaching is at average scale. This is because the data collected is from one university only. It is found that one of the key elements to the adoption towards technology is people's attitude (John, 2015). The educators, which have adopted a positive attitude toward the new technologies, recognize different software tools as a supplementary tool, which can make the learning, process easier (Pettersson, 2017). Educators' attitudes, is an indicator which can predict their willingness to use those ESS tools during in the classroom (González *et al.*, 2015).

After completing the research, the study results have met the objective of the study. The study found that the positive attitude of lecturers towards the use of ESS for teaching can lead to the actual use of ESS by lecturers in education. The research findings show that there is positive relationship between the variables. The use of ESS in education can be implement with the positive attitude of lecturers

towards the use of ESS for teaching. This can give a positive impact towards the educational system in the future.

It is recommended that deeper research should be conducted in Malaysia in order to discover more on the Educational Support System (ESS) use in education. This is because there are many benefits and advantages in using ESS for education. Besides, the use of ESS in education could increase the performance of the lecturers or educators in delivering their lectures. Students also can get benefits which is more exposure to the sources that can be used for their study and it is easier for them to reach out for any materials from either lecturers or from others sources.

## References

- Adetoun, T. (2017). Types and Use of Educational Support Systems by Library Educators in Universities in Nigeria: Towards Quality and Effective Teaching Practices, (July). <https://doi.org/10.14662/IJALIS2016.033>
- Akande, T. A. (2017). Effect of Lecturers' Attitude on Use of Educational Support Systems for Teaching in University-based Library Schools in Nigeria, 2317. <https://doi.org/10.1080/10572317.2017.1270695>
- Al-emran, M., Elsherif, H. M., & Shaalan, K. (2016). Computers in Human Behavior Investigating attitudes towards the use of mobile learning in higher education. *Computers in Human Behavior*, 56, 93–102. <https://doi.org/10.1016/j.chb.2015.11.033>
- Al-rahmi, W. M., Alias, N., Othman, M. S., Alzahrani, A. I., Alfarraj, O., Saged, A. L. I. A. L. I., ... Rahman, A. (2018). Use of E-Learning by University Students in Malaysian Higher Educational Institutions: A Case in Universiti Teknologi Malaysia. *IEEE Access*, 6, 14268–14276. <https://doi.org/10.1109/ACCESS.2018.2802325>
- Al-rahmi, W. M., Othman, M. S., & Yusuf, L. M. (2015). The Effectiveness of Using E-Learning in Malaysian Higher Education: A Case Study Universiti Teknologi Malaysia, 6(5), 625–637. <https://doi.org/10.5901/mjss.2015.v6n5s2p625>
- Al-said, K. M. (2015). Students' Perceptions of Edmodo and Mobile Learning and their Real Barriers towards them, 14(2), 167–180.
- Al-samarraie, H., Teng, B. K., & Alzahrani, A. I. (2017). Studies in Higher Education E-learning continuance satisfaction in higher education: a unified perspective from instructors and students. *Studies in Higher Education*, 0(0), 1–17. <https://doi.org/10.1080/03075079.2017.1298088>
- Al, A. (2015). Computer usage: the impact of computer anxiety and computer self-efficacy, 172, 701–708. <https://doi.org/10.1016/j.sbspro.2015.01.422>
- Alharbi, S., & Drew, S. (2014). Using the Technology Acceptance Model in Understanding Academics' Behavioural Intention to Use Learning Management Systems, 5(1), 143–155.
- Anagnostopoulou, E., & Koutsouba, M. (2015). Student Satisfaction in the Context of a Postgraduate Programme, (April), 40–55.
- Arpaci, I. (2016). Computers in Human Behavior Understanding and predicting students' intention to use mobile cloud storage services. *Computers in Human Behavior*, 58, 150–157. <https://doi.org/10.1016/j.chb.2015.12.067>
- Baki, R. (2018). A Meta Analysis of Factors Affecting Perceived Usefulness and Perceived Ease of Use in the Adoption of E-Learning Systems, (October), 4–42.
- Barbera, E., & Linder-vanberschot, J. A. (2013). Factors Influencing Student Satisfaction and Perceived Learning in Online Courses, 10(3), 226–235. <https://doi.org/10.2304/elea.2013.10.3.226>
- Brezavšček, A. (2017). Factors Influencing the Behavioural Intention to Use Statistical Software: The Perspective of the Slovenian Students of Social Sciences, 8223(3), 953–986. <https://doi.org/10.12973/eurasia.2017.00652a>

- Chouit, D. (2017). Exploring the Correlation between Professors ' Use of ICT in Teaching and the Levels of Institutional Support, *2*(1), 47–63.
- Emelyanova, N., & Voronina, E. (2014). Introducing a Learning Management System at a Russian University : Students ' and Teachers ' Perceptions.
- Fathema, N., Shannon, D., & Ross, M. (2015). Expanding The Technology Acceptance Model ( TAM ) to Examine Faculty Use of Learning Management Systems ( LMSs ) In Higher Education Institutions, *11*(2), 210–232.
- Ganiyu, R. S., Olasedidun, O. K. & Badmus, A. M. (2014). Institutional Factors as Predictors of Colleges of Education.
- Ghavifekr, S., Athirah, W., Rosdy, W., & Teaching, W. A. W. (2015). Teaching and Learning with Technology : Effectiveness of ICT Integration in Schools Teaching and Learning with Technology : Effectiveness of ICT Integration in Schools.
- González, A., Ramírez, M. P., & Viadel, V. (2015). ICT Learning by Older Adults and Their Attitudes toward Computer Use, *2015*.
- Gündüz, A. Y. (2016). Design of a Problem-Based Online Learning Environment and Evaluation of its Effectiveness, *15*(3), 49–57.
- Hamid, S., Waycott, J., Kurnia, S., & Chang, S. (2015). Internet and Higher Education Understanding students ' perceptions of the bene fi ts of online social networking use for teaching and learning. *The Internet and Higher Education*, *26*, 1–9. <https://doi.org/10.1016/j.iheduc.2015.02.004>
- Hatlevik, O. E., Throndsen, I., Loi, M., & Gudmundsdottir, G. B. (2014). Students ' ICT self -efficacy and computer and information literacy : Determinants and relationships Author Note Ove E . Hatlevik , Faculty of Education and International Studies , Oslo and Akershus University College of Applied Sciences ; Inger Throndsen, (1), 1–30.
- Hess, T. J., & Mcnab, A. L. (2014). Reliability Generalization of Perceived Ease of Use, Preceived Usefulness and Behavioral Intentions, *38*(1), 1–28.
- Hill, R., Betts, L., Gardner, S., & Street, B. (2016). Empowerment and Enablement through Digital Technology in the Generation of the Digital Age.
- Horzum, M. B. (2015). Interaction , Structure , Social Presence , and Satisfaction in Online Learning, *11*(3), 505–512. <https://doi.org/10.12973/eurasia.2014.1324a>
- Huang, Y. (2017). Exploring the intention to use cloud services in collaboration contexts among Taiwan ' s private vocational students, *33*(1), 29–42. <https://doi.org/10.1177/0266666916635223>
- Imtiaz, A., & Maarop, N. (2014). A Review of Technology Acceptance Studies in the Field of Education, *2*, 27–32.
- Islam, A. Y. M. A., Mo, M., Mok, C., Gu, X., Spector, J. M., & Hai-leng, C. (2019). ICT in Higher Education : An Exploration of Practices in Malaysian Universities. *IEEE Access*, *7*, 16892–16908. <https://doi.org/10.1109/ACCESS.2019.2895879>
- Jahjough, Y. M. A. (2014). The Effectiveness of Blended E- Learning Forum in Planning for Science Instruction. <https://doi.org/10.12973/tused.10123a>
- John, S. P. (2015). The integration of information technology in higher education : a study of faculty ' s attitude towards IT adoption in the teaching process, *60*, 230–252.
- Kasmin, K., & Hii, P. K. (2017). Students' Experiences, Learning Outcomes and Satisfaction in E-Learning., *13*, 117–128. <https://doi.org/10.20368/1971-8829/1298>
- Kauffman, H. (2015). A review of predictive factors of student success in and satisfaction with online learning, *23*(1063519), 1–13.
- Khasawneh, R., Simonsen, K., Snowden, J., Higgins, J., Beck, G., Khasawneh, R., ... Beck, G. (2016). The effectiveness of e-learning in pediatric medical student education, *2981*. <https://doi.org/10.3402/meo.v21.29516>
- Kintu, M. J., Zhu, C., & Kagambe, E. (2017). Blended learning effectiveness : the relationship between student characteristics , design features and outcomes. <https://doi.org/10.1186/s41239-017-0043-4>

- Langkos, S. (2019). Research Methodology: Data collection method and Research tools, 2019(January 2015). <https://doi.org/10.13140/2.1.3023.1369>
- Lee, Y., & Lee, J. (2014). Computers & Education Enhancing pre-service teachers' self-efficacy beliefs for technology integration through lesson planning practice. *Computers & Education*, 73, 121–128. <https://doi.org/10.1016/j.compedu.2014.01.001>
- Merchant, Z., Goetz, E. T., Cifuentes, L., Keeney-kennicutt, W., & Davis, J. (2014). Computers & Education Effectiveness of virtual reality-based instruction on students' learning outcomes in K-12 and higher education: A meta-analysis. *Computers & Education*, 70, 29–40. <https://doi.org/10.1016/j.compedu.2013.07.033>
- Mtebe, J. S., Raisamo, R., & Onlinecourses, N. (2014). Challenges and Instructors' Intention to Adopt and Use Open Educational Resources in Higher Education in Tanzania.
- Ng, H. Z. (2018). An Analysis on Adult Learners' Satisfaction in Online Education Programmes, 70–85.
- Nikou, S. A., & Economides, A. A. (2017). Computers & Education Mobile-based assessment: Investigating the factors that influence behavioral intention to use. *Computers & Education*, 109, 56–73. <https://doi.org/10.1016/j.compedu.2017.02.005>
- Noesgaard, S. S., Ørngreen, R., & Foundation, K. (2015). The Effectiveness of E-Learning: An Explorative and Integrative Review of the Definitions, Methodologies and Factors that Promote e-Learning Effectiveness, 13(4), 278–290.
- Ozdamli, F., & Uzunboylu, H. (2015). M-learning adequacy and perceptions of students and teachers in secondary schools, 46(1), 159–173. <https://doi.org/10.1111/bjet.12136>
- Pettersson, T. (2017). Observation about Lecturer's Attitudes and Their Use of Educational Software and Digital Resources (November), 8146–8157.
- Pham, L., Limbu, Y. B., Bui, T. K., Nguyen, H. T., & Pham, H. T. (2019). Does e-learning service quality influence e-learning student satisfaction and loyalty? Evidence from Vietnam.
- Rajesh, S., & Dhuvandranah, S. (2018). Learning in a Small Island Developing State (SIDS) Economy; Evidence from Mauritius., 13(13), 135–160. <https://doi.org/10.2478/sbe-2018-0040>
- Salter, S. M., Karia, A., Pharm, H., Sanfilippo, F. M., & Clifford, R. M. (2014). Effectiveness of E-learning in Pharmacy Education, 78(4), 16–22.
- Siddiq, F., & Scherer, R. (2016). The relation between teachers' emphasis on the development of students' digital information and communication skills and computer self-efficacy: the moderating roles of age and gender. *Large-Scale Assessments in Education*. <https://doi.org/10.1186/s40536-016-0032-4>
- Sivo, S. A. (2018). Understanding how university student perceptions of resources affect technology acceptance in online learning courses, 34(4), 72–91.
- Steenbergen-hu, S., & Cooper, H. (2014). A Meta-Analysis of the Effectiveness of Intelligent Tutoring Systems on College Students' Academic Learning, 106(2), 331–347. <https://doi.org/10.1037/a0034752>
- Taylor, P., Hsia, J., Chang, C., & Tseng, A. (2014). Behaviour & Information Technology Effects of individuals' locus of control and computer self-efficacy on their e-learning acceptance in high-tech companies, (April 2014), 37–41. <https://doi.org/10.1080/0144929X.2012.702284>
- Technology, C. (2014). Investigating students' behavioural intention to adopt and use mobile learning in higher education in East Africa Joel S. Mtebe University of Dar es Salaam, Tanzania Roope Raisamo University of Tampere, Finland, 10(3), 4–20.
- Teo, T., & Zhou, M. (2014). Explaining the intention to use technology among university students: a structural equation modeling approach, 124–142. <https://doi.org/10.1007/s12528-014-9080-3>
- Topal, A. D. (2016). Examination of University Students' Level of Satisfaction and Readiness for E-Courses and the Relationship between Them, (15), 7–23. <https://doi.org/10.13187/ejced.2016.15.7>
- Wang, X. (2017). An Analysis of the Integration of ICT in Education from the Perspective of Teachers' Attitudes Xiaojun Wang, Jiří Dostál, (July). <https://doi.org/10.21125/edulearn.2017.0507>

- Xu, D., Huang, W. W., Wang, H., & Heales, J. (2014). Enhancing e-Learning Effectiveness Using an Intelligent Agent-Supported Personalized Virtual Learning Environment: An Empirical Investigation. *Information & Management*. <https://doi.org/10.1016/j.im.2014.02.009>
- Yu, C., Chang, H., & Chen, K. (2018). Total Quality Management & Business Excellence Developing a performance evaluation matrix to enhance the learner satisfaction of an e-learning system, 3363. <https://doi.org/10.1080/14783363.2016.1233809>
- Zogheib, B., I, A. R., Zogheib, S., & Elseheli, A. (2015). University Student Perceptions of Technology Use in Mathematics Learning, *14*, 417–438.